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10/085,659

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EXAMINER

YENKE, BRIAN P

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

**MAILED**

Application Number: 10/085,659  
Filing Date: February 26, 2002  
Appellant(s): NISHI ET AL.

**FEB 21 2008**

**Technology Center 2600**

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Thomas F. Presson  
Reg. No. 41,442  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 14 December 2007 appealing from the Office action mailed 14 June 2007.

**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

A statement identifying there are no related appeals or interferences in the brief is correct.

**(3) *Status of Claims***

A statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments***

All amendments have been entered.

**(5) *Summary of the Invention/Claimed Subject Matter***

The summary of invention contained in the brief is correct.

**(6) *Grounds of Rejection To Be Reviewed on Appeal***

The appellant's statement on the grounds of the rejection in the brief is correct.

**(7) *Claims 1-23 (Appendix)***

The copy of the appealed claims contained in the Appendix in the Brief is correct.

**(8) *Evidence Relied Upon***

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

Burstyn	WO-01/33846	05-2001
Schumann et al	US 6,590,532	09-2005
Frankowski (citation/overview disclosed in Yamaguchi US 20050035314)		02-2005
Frankowski (same inventor as above, the full article)	SPIE Vol 3958	02-2001

**(9) Grounds of Rejection**

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burstyn, WO 01/33846 in view of Frankowski et al. (disclosed in US 20050035314, para 84) and Schumann et al., US 6,950,532.

Regarding claims 1, 8 and 10-23

Burstyn discloses causing a periodic modulation in optical intensity of an original display image in the temporal domain so as to generate an optical state variation in a recorded image that is obtained by image capturing a display image (page 2, Imines 4-10), wherein the optical state variation is independent of the original display image and generates no interfering effect in the display image, when directly viewed (page 2, Imines 10-14).”, where Burstyn disclose modulating the red, green and/or blue components (which includes the luminance of a signal).

Regarding the newly added limitation “utilizing a rotation filter...”.

Burstyn does not explicitly recite a rotating filter (i.e. conventional color wheel which includes the claimed limitations). However, Burstyn does disclose various embodiments/options in the system; one may use a light source with a filter (510, Fig 3a) where varying the filter via controller 500 generates the interfering signal. Burstyn also discloses the use of shutters as well as digital logic processor (varying the

cycle of mirrors). It is also noted that the applicant's own specification discloses that in addition to a rotating filter other methods may be used, such as shutters.

Although the concept of varying a filter (by using a rotating filter—i.e. color wheel) is notoriously well known in the art and would perform the same function as disclosed by Burstyn's varying filter which uses a digital pulsating waveform, the examiner nonetheless incorporates takes Schumann, US 6,950,532 (Fig 11, element 1116) which discloses the concept of a Rota table filter in conjunction with a DMD.

It is also noted that the combination of Burstyn/Schumann does not disclose the conventional capability of such a filter (i.e. color wheel) to having a sinusoidal density variation along its circumferential direction, in said luminance modulation. Although the practice of such is conventional in the art in the field of highly accurate displays, the examiner evidences such by relying on para 84 of 20050035314 (notably the citation of Frankowski), wherein "a stripe pattern whose luminance changes continuously in the form of a sinusoidal waveform is projected with high accuracy by means of the DMD.

Therefore, it would have been clearly obvious to one of ordinary skill in the art at the time of the invention to modify Burstyn which discloses copyright protection via a varying filter, by using filters which are readily available such as (color wheels) wherein such wheel in combination with a modulator (i.e. DMD) provide highly accurate display as taught by Frankowski.

Regarding claim 2,

The combination above discloses "wherein: an optical intensity is modulated in a sinusoidal waveform in the temporal domain, and an amplitude and a frequency of the sinusoidal waveform are such that the amplitude and frequency of a resulting optical intensity modulation over time in each recorded frame, captured by an image capturing apparatus, are that of a region having contrast greater than or equal to a temporal frequency contrast sensitivity threshold of the human vision at a Luminance Level in the original display image." (Figure 2 shows the varying waveform', page 5, Line 28 -page 6, Line 2)

Regarding claim 3,

The combination above discloses "wherein: the amplitude of the sinusoidal waveform is such that the amplitude of the optical intensity modulation is less than or equal to an amplitude value derived from the temporal frequency contrast sensitivity threshold of the human vision at the frequency of the sinusoidal waveform that is defined in claim 4, at a luminance Level of the display image." (Figure 2 shows the varying waveform, page 5, Line 28 - page 6, line 2).

Regarding claim 4,

The combination above discloses "wherein: the optical state is modulated in a composite waveform, and at least one combination of amplitudes and frequencies of sinusoidal components of the composite waveform is such that an amplitude and a frequency of the optical state variation in the temporary domain in each recorded frame, captured by an image capturing apparatus, are that of a region having contrast greater than or equal to a temporal frequency contrast sensitivity threshold of the human vision at a luminance Level in the original display image." (Figure 2 shows the varying waveform, page 5, Line 28 - page 6, Line 2)

Regarding claim 5,

The combination above discloses "wherein: the amplitude of the sinusoidal waveform is such that the amplitude of each sinusoidal component waveform is less than or equal to an amplitude value derived from a temporal frequency contrast sensitivity threshold of the human vision at the frequency of the sinusoidal waveform that is defined in claim 6, at a luminance level of the display image." (Figure 2 shows the varying waveform, page 5, Line 28 - page 6, Line 2)

Regarding claim 6,

Burstyn discloses "wherein: different types of optical intensity modulation are applied at different positions in the display image." (page 6, lines 13-18)

Regarding claim 7,

Burstyn discloses wherein: different types of optical intensity/modulation are applied at different time periods." (page 7, lines 4-8).

Regarding claim 9,

Burstyn discloses wherein: the optical state variation in the recorded image is in the color domain." (page 8, lines 8-10).

## ***(10) Response to Arguments***

### ***Appellant's Arguments***

a) Appellant argues that the combination of references does not teach/suggest "utilizing a rotation filter, including a rotate-able filter part having a sinusoidal density variation along its circumferential direction, in said luminance modulation". More specifically, the appellant stated that the relied upon reference Frankowski (which was disclosed in para 84 of US 2005/0035314, Yamaguchi) uses a projector not filter to modulate light intensity, therefore not meeting the claim limitation.

### ***Examiner's Response***

a) The examiner disagrees. The examiner retrieved the cited article, wherein Frankowski discloses (page 97, line 19-21), the use of a DMD and color wheel (i.e. the same filter used by applicant) to project/modulate/filter the light for projecting an image with high accuracy. It is noted that Frankowski relates to Real-time 3D shape measurement systems, although as stated in US 2005/0035314 (para 84), the system is able to project a stripe pattern whose luminance changes continuously in the form of a sinusoidal waveform with high accuracy by means of the DMD (and the use of a color wheel as disclosed in article SPIE 3958), to produce a highly accurate 3D image.

## ***(11) Related Proceeding Appendix***

The appellant's statement that there are no related proceedings and thus not corresponding appendix is correct.

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For the above reasons, it is believed that the rejections be sustained.

Respectfully submitted,



BPY

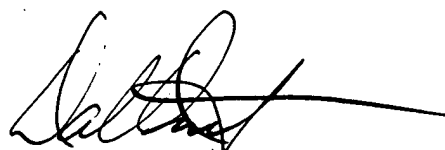
11 February 2008



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